

CLAIMS

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1. A wiring comprising a Cu (copper) layer surrounded by a coating film made of titanium or titanium oxide.

2. A wiring comprising a Cu layer surrounded by a coating film made of molybdenum or molybdenum oxide.

3. A wiring comprising a Cu layer surrounded by a coating film made of chromium or chromium oxide.

4. A wiring comprising a Cu layer surrounded by a coating film made of tantalum or tantalum oxide.

5. A wiring as claimed in claim 1, wherein the coating film includes a titanium film and a film made of titanium oxide.

6. A wiring as claimed in claim 1, wherein the coating film includes a titanium film formed around the Cu layer, and a film which is made of titanium oxide and is formed on the surface of the titanium film.

7. A wiring as claimed in claim 1, wherein the coating film includes a titanium film provided at a portion of the circumferential area of the Cu layer, and a film which is provided at the remaining portion of the circumferential area of the Cu layer and is made of titanium oxide.

8. A wiring as claimed in claim 3, wherein the coating film includes a chromium film and a film made of chromium oxide.

9. A wiring as claimed in claim 3, wherein the coating film includes a chromium film formed around the Cu layer, and a film which is made of chromium oxide and is formed on the surface of the chromium film.

10. A wiring as claimed in claim 3, wherein the coating film includes a chromium film provided at a portion of the circumferential area of the Cu layer, and a film which is provided at the remaining portion of the circumferential area of the Cu layer and is made of chromium oxide.

11. A TFT (thin film transistor) substrate having a wiring as claimed in any one of claims 1 to 4.

12. A TFT substrate comprising a base and a wiring as claimed in claim 1 which is formed on the base via a TiN film.

13. A TFT substrate comprising a base and a wiring comprising a Cu layer and a coating film made of titanium or titanium oxide which is formed on the surface of the Cu layer, wherein the wiring is provided on the base via a TiN film.

14. A TFT substrate as claimed in claim 13, wherein the coating film of the wiring includes a titanium film formed around the Cu layer, and a film which is made of titanium oxide and is formed on the surface of the titanium film.

15. A method of manufacturing a TFT substrate, comprising the steps of:
forming a Cu film on a metallic film by using a target made of Cu, wherein the metallic film is formed on a base and is made of a metal selected from the group consisting of titanium, molybdenum, chromium, and tantalum;

patterning-processing the Cu film and the metallic film to make a wiring having a desired shape; and

annealing-processing the base so as to form a metallic coating film on the patterning-processed Cu film, wherein the metallic coating film is made of a metal selected from the group consisting of titanium, molybdenum, chromium, and tantalum;

16. A method of manufacturing a TFT substrate, comprising the steps of:
forming a TiN film on a base;
forming a film made of titanium or titanium oxide on the TiN film;
forming a Cu film on the film made of titanium or titanium oxide by using a target made of Cu, so that a multi-layered film is formed;
patterning-processing the multi-layered film to make a wiring having a desired shape; and
annealing-processing the base so as to form a coating film made of titanium or titanium oxide on the patterning-processed Cu film.
17. A method of manufacturing a TFT substrate, as claimed in claim 16, wherein the thickness of the film made of titanium or titanium oxide formed on the TiN film is 10 to 20 nm.
18. A method of manufacturing a TFT substrate, as claimed in claim 15 or 16, wherein the coating film includes oxygen.
19. A method of manufacturing a TFT substrate, as claimed in claim 16, wherein a titanium oxide layer, which is generated on the surface of the film made of titanium or titanium oxide before the Cu film is formed, is removed by plasma etching.

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20. An LCD (liquid crystal display) comprising a pair of opposing substrates and a

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liquid crystal disposed between the opposing substrates, wherein one of the pair of opposing substrates is a TFT substrate as claimed in any one of claims 11, 12, and 13.

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